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ments which are apt to be misleading. He ascribes it to a few isolated individuals and to sustenance-seeking agitators. The facts are, that whole groups, trades, have directly been affected wherever prison labor has entered the market. The statement which contractors are said to make, that convict labor at fifty cents a day is not cheaper than free labor, is not to be believed except upon the most positive evidence, for the prisoners are driven and tortured to daily perform a set task; and that this is not an average half-day work is pretty safe to surmise.

As to the selfish 'agitator,' he is the great bug-aboo of those who do not know him, or whose interests are threatened by him. The truth is, that his is a losing business: he is persecuted, blacklisted, hunted, and misunderstood and denounced; and that he still remains true to what he deems his duty is a trait that should be honored by all who can appreciate an unselfish action.

The real stand-point of the humane school and its agitators is, that 'prison labor must go,' in so far as it is directed to the production of wares for the general market. The piece-price plan and similar tub-to-the-whale measures will not stop this agitation. The employment of prisoners towards their own support directly, as food-raising, prison-building, etc., or their employment on public improvements, is the only thing that will divert the rapidly increasing political activity of workmen as a class from this 'agitation.'

E. LANGERFELD.

Your correspondent misses entirely the tenor of the articles referred to. They were not written from the stand-point of any school of political economy whatsoever, but from the stand-point of practical ethics. That convicts are to be subjected to reformatory and ennobling influences is a truism which my articles took for granted. That idleness is an ennobling influence, that productive labor on the part of convicts is of no injury to the community, were the two points which I was concerned to establish. Dogmatic statements in regard to competition of convict with free labor cannot stand in the face of the figures adduced in the second article (*Science*, vii. p. 68), which were in every case official. Having established the fact that convicts are best employed in productive industries, it only remains to determine from the facts, not theories, which of the systems is the best. This is, I claim, the contract system, when it is properly administered. The question of prison labor is a large one, and, in the articles criticised by your correspondent, but a small portion of it was touched upon.

NICHOLAS MURRAY BUTLER.

A tornado brood in Hampshire county, Mass.

The facts recently published, showing the wide distribution of tornadoes along the south-eastern border of a stormy area of low barometer, and the further evidence that they occur with special frequency but at no fixed points in certain regions, throw no light on observations made incidentally by me during a residence at Amherst, Mass., from 1870 to nearly 1880. I write this with the hope that persons in the central and western parts of Hampshire county, Mass., will for several years make and record observations of a storm breeding-place to be now described, and note the day and hour, so that the results can be compared with a series of signal-service weather-maps. Some immediate comparison can also be made by noting

down at the time the newspaper signal-office report. I have something to say, also, of the peculiar storm or wind-gust that destroyed Northampton bridge in 1877.

My house at Amherst, on 'Mount Pleasant,' commanded the Connecticut River valley for nearly the entire width of Massachusetts. Directly west of me, on a line with the foot of the steepest northern slope of Mount Warner, but west of the river, was what I may term a 'cloud nursery;' not that I remember it as conspicuously originating clouds in a fair sky, but rather and very often as strengthening, enlarging, darkening, any floating cumulus or cumulostratus, and seemingly arresting and holding it there until it became sometimes a rain-cloud, and, in three or four instances, a tornado. It seemed to be over or little beyond the hills west of Hatfield. My impression was, that it must be somewhat beyond; namely, over the Mill River valley in the vicinity of Williamsburg. The hills thereabout are not high, not as high as others visible in the Green Mountain range, beyond and to the north. My theory is, that warm, moist, southerly winds all the way from Connecticut, through the wide valley of Southwick, Westfield, Southampton, were thrown upward in the narrowing Mill River valley, which runs north-north-west from Northampton, and so moisture was condensed in the upper air, the upward current at times inviting toward it a tornado inrush of colder air.

Certainly it was just there that two tornadoes by day, and probably one in the evening, originated, Sept. 4, 1873. The apparently stationary cloud had been for some time increasing and darkening, when, soon after noon, I noticed a portion of it hanging down like the inverted crown of a low-crowned hat; and, not long after, the cloud seemed to begin a movement towards the north-east, until, as it approached Whately, the increasing downward projection became ragged at the edges, and two opposite motions of the wisps indicated a whirl. For a moment an ascending funnel from the Connecticut River, near Sunderland, met the descending one from the cloud; and, soon after, the now large and wild whirl struck a shoulder of Mount Toby, levelling a strip of forest, and doing much damage in the village of Long Plain, bounded up the hills east of that, and nothing more was seen or heard of it. The second tornado, an hour later, starting from the same centre, was less threatening in appearance, passed over North Amherst, about seven miles south of the first, and reached the earth only as a harmless gust of wind. A third fell on Northampton at 8 P.M., prostrating many of its grandest elms. There was a fourth, somewhat destructive, at Granby, Mass., just south of the Holyoke range, at 3 P.M., simultaneous with the one that moved over North Amherst. This one at Granby, originating at another point in Hampshire county, and the fact that my pocket-diary notes a storm and violent wind visible in the far north on the following day, suggest some general conditions in the atmosphere favorable to tornadoes, but do not alter the fact that I saw ordinary clouds increase on a day of seemingly ordinary weather, at the spot mentioned, and convert themselves into tornadoes at 1 and 3 o'clock on the day named.

That there may be another local centre south of the Holyoke range, in the region of Granby, is probable from the fact that in 1872, Aug. 16, there was an isolated tornado at Wilbraham and Longmeadow. My note-book, in this connection, only speaks of

heavy rain the 14th and 15th, and on the 16th records 'rain about every P.M. this summer.'

The remarkable gust of rain and wind that wrecked the long bridge over the Connecticut River, and many fine elms there and in Hadley, June 14, 1877, began as the usual darkening of more or less general and ordinary cumulo-stratus at the same centre near Williamsburg. It seemed hardly moving, with a slight sheet of rain, for a while, and then I noticed its rather rapid increase of size and motion. It expanded south-east, in shape like a ploughshare, and its accelerated movement down the hill-slopes toward Northampton became exciting to witness. There was nothing like a downward-reaching funnel; but the whole rain-cloud was near to the earth, and, for a while before reaching the river-bridge, there were, in front of the cloud, wisps of cloud that moved rapidly upward, backward, and downward, as if around a horizontal axis. After passing Hadley, it exhibited no features different from a common rain-cloud, and passed off over the Holyoke range.

Files of signal-service weather-maps may be consulted for the days above mentioned; and citizens of Northampton may recall enough to show whence the tornado came on the evening of Sept. 4, 1873. The hotel on Mount Holyoke would be an excellent post of observation to exactly locate and watch the cloud-intensifying spot above described.

H. W. PARKER.

Grinnell, Io.

Tadpoles in winter.

A few days ago one of my students brought me three large tadpoles, seven centimetres in length, from a well in a depression in an open field. The well overflows in the spring of the year, and the water this winter has been quite cold, yet the tadpoles do not seem torpid at all, but swim freely about.

I had always supposed that these animals could only live in the warmer months of the year, and would like to know if any readers of *Science* have ever found them alive during the winter.

H. M. HILL.

Watertown, N.Y., Jan. 30.

A monument to de Saussure.

The month of August, 1887, is the centenary of the ascent of Mont Blanc by de Saussure, the first to accomplish it after Jacques Balmont, the guide, whose success of the previous year had been stimulated by de Saussure's offer of a prize for the discovery of a practicable route.

The commune of Chamonix, with the co-operation of the French alpine club and others, proposes to erect a monument to the eminent geologist, physicist, and explorer. American contributions toward this object will show our appreciation of the character of the man, and the value of his work.

The Appalachian mountain club, in response to solicitation from the French society, will take pleasure in transmitting donations, which may be sent to the corresponding secretary, Prof. Charles E. Fay, at the club-room. Owing to delay in receiving the invitation, replies must be immediate, as the lists are open abroad only until the close of the present month.

J. RAYNER EDMANDS,
President.

The Appalachian mountain club,
7 Park Street, Boston, Mass., Feb. 2.

The Davenport tablets.

In the issues of your journal for Dec. 25 and Jan. 1, Rev. Cyrus Thomas, of the Bureau of ethnology, directs attention to the Davenport tablets, and seriously questions their authenticity. In entering upon this undertaking, Professor Thomas stated, that, to properly discuss the question of their genuineness, "a personal inspection of the relics, and a thorough investigation of all the circumstances attending their discovery, should be made;" and then he added, "I do not claim to be thus prepared." Probably no writer ever before set out to prepare a piece of 'destructive criticism' with so frank a confession of his disqualification for the task.

In his arraignment of our relics, Professor Thomas charges upon them these grave offences: that on the limestone tablet the sun is represented with a face, and that the artist has carved thereon the 'Arabic 8' and the 'Roman numerals viii'; that on the shale tablets there are also 'three Arabic 8's'; that nearly all of the letter characters of the 'cremation scene' may be found on p. 1766 of Webster's Unabridged dictionary, edition of 1872; and that the two forms of the 'Gallic O' appear together on the tablet just as given on the page of the dictionary. These are fair specimens of the arguments by which Professor Thomas attempts to controvert the unimpeached statements of the discoverers. The resemblances indicated are so trivial and purely fanciful as to scarcely attain the level of serious criticism. If Professor Thomas will take the Grave Creek tablet, or even the famous Rosetta stone, and sit down before them with his 'Webster's Unabridged,' he will find no end of similar resemblances. A single glance, for instance, at the Grave Creek tablet will reveal the 'Arabic 4,' twice repeated, and he will find his arguments equally forcible if applied to it. In answer to the accusation that the sun appears with a face, it may be said that this is not uncommon in Indian pictography.

In his impeachment of the limestone tablet, Professor Thomas then advances this argument: "The simple fact that the vault under the pile of loose stones was empty, save the presence of the relic, appears to absolutely forbid the idea of age. It is well known to all who have taken any part in excavating, that the water running down through earth, and a pile of stones beneath, will at length fill all the crevices with earth, and, in fact, all places not hermetically sealed."

It will be noticed that Professor Thomas speaks of this limestone tablet being 'under a pile of loose stones,' which is an inaccurate statement, inasmuch as the vault wherein it was placed was entirely covered by a limestone slab, now in the museum of the academy. Therefore, so far as any direct descent of water was concerned, this vault was practically 'hermetically sealed.' If water entered at all, it must have been horizontally through the wall of loose stones at the sides. The crevices in this wall were filled with decayed shells, and, as most of the water falling upon a mound would pass off on the surface, the small amount of moisture absorbed into its substance would not 'run down through the earth' at all, but instead would slowly percolate from grain to grain of sand or clay, which, having no current like 'running water,' could transport little or no earth. Apparently no good reason can be given why a vault so protected from above, as well as at the sides, could not remain empty for ages.